

Issued June 3, 1916.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE GEORGIA STATE COLLEGE OF AGRICULTURE,  
ANDREW M. SOULE, PRESIDENT; DAVID D. LONG,  
IN CHARGE OF SOIL SURVEY.

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SOIL SURVEY OF TURNER COUNTY,  
GEORGIA.

BY

E. C. HALL, OF THE U. S. DEPARTMENT OF AGRICULTURE,  
AND DAVID D. LONG, OF THE GEORGIA  
STATE COLLEGE OF AGRICULTURE.

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W. EDWARD HEARN, INSPECTOR, SOUTHERN DIVISION.

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[Advance Sheets—Field Operations of the Bureau of Soils, 1915.]



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1916.

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## LETTER OF TRANSMITTAL.

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U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF SOILS,  
*Washington, D. C., November 27, 1915.*

SIR: In continuation of the soil survey in the State of Georgia during the field season of 1915 a survey was made of Turner County. This work was done in cooperation with the Georgia State College of Agriculture, and the selection of this area was made after conference with State officials.

I have the honor to transmit herewith the manuscript report and map covering this work and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1915, as authorized by law.

Respectfully,

MILTON WHITNEY,  
*Chief of Bureau.*

Hon. D. F. HOUSTON,  
*Secretary of Agriculture.*

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## SOIL SURVEY OF TURNER COUNTY, GEORGIA.

By E. C. HALL, of the U. S. Department of Agriculture, and DAVID D. LONG, of the Georgia State College of Agriculture. W. EDWARD HEARN, Inspector.

### DESCRIPTION OF THE AREA.

Turner County is located in the south-central part of Georgia. It is bounded on the north by Crisp and Wilcox Counties; on the east by Ben Hill and Irwin Counties, from which it is separated in part by the Allapaha River; on the south by Tift and Worth Counties; and on the west by Worth County. The southern boundary of the county lies about 60 miles north of the Georgia-Florida line. The greatest dimensions of the county east and west and north and south are 20 and 18 $\frac{3}{4}$  miles, respectively. It has an area of 278 square miles, or 177,920 acres.

The topographic features are rather uniform, the prevailing topography ranging from undulating to rolling. A few local areas, as in the northwestern and east-central parts, have a choppy and broken topography, which has resulted from stream erosion. The county occupies that part of the Coastal Plain known as the Altamaha Upland and locally as the "Wiregrass Country."<sup>1</sup> The elevation of the county ranges from 350 to 450 feet above sea level. Ashburn is the highest point, with an elevation of 450 feet. Rebecca is 373 feet above sea level. Other elevations are Sycamore 415 feet, Dakota 410 feet, Worth 415 feet, and Sibley 440 feet.

Throughout the eastern part of the county are scattered ponds. The largest of these, which are said to contain water the entire year, are known as Ross Lake, Paulks Pond, and Busseys Pond. In the vicinity of Ross Lake and Paulks Pond there seem to be shallow depressions existing in a large area of Norfolk sand. The ponds may be sink holes due to the solution of some underlying material. These large areas of sand are found along the large streams, particularly

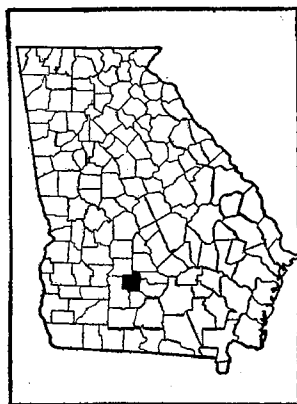


FIG. 1.—Sketch map showing location of the Turner County area, Georgia.

<sup>1</sup> Veatch. Geology of the Coastal Plain of Georgia.

Deep Creek and Little River. They have a billowy and dunelike topography and are known locally as "Sand Hills."

The county is well drained. The larger streams and their tributaries form a network of drainage ways covering all parts of the county. This condition makes it impossible to find more than a very few large areas of land that do not have some small strips of waste land or that are not connected with these natural drainage channels. The streams are slow moving, flowing sluggishly through wide, shallow channels which lie from a few feet to 50 feet or more below the general level of the country. The larger streams are bordered by poorly drained areas covered with a dense growth of vegetation and known as swamp. The water is clear, carrying little or no sediment, and except at flood stages neither erodes nor deposits.

The county is divided into almost equal parts by a watershed. This extends northward from the Tift County line along the Georgia Southern & Florida Railway to Ashburn, following thence the public road running in a northwestern direction, past County Line and Hopewell Schools. The country on the west side of this divide is drained by Little River, Daniels and Swift Creeks, and their tributaries, whose waters finally reach the Gulf of Mexico through the Flint River. On the east side of the divide the drainage ultimately reaches the Atlantic Ocean through the Allapaha River and its tributaries. All the bottoms lying along these streams are subject to overflow and very little of this land is in cultivation. Many of the small branches dry up during the summer months.

The largest part of the original forest in the uplands consisted of longleaf yellow pine. Some shortleaf pine and a few scattering oaks were also found. Most of this forest has been removed and the greater part of the land put into cultivation. One tract containing about 6,000 acres is still standing. Practically all of the merchantable timber along the streams also has been removed. This consisted of cypress, gum, sycamore, ash, swamp maple, and magnolia. In the early days of the county the settlers received large returns from the lumbering and turpentine industries. These have now almost disappeared, and the future welfare of the county depends largely upon agricultural pursuits.

Turner County was created in 1906. It was made from parts of Irwin, Wilcox, Dooly, and Worth Counties. Most of the people of this locality came from other parts of the State, especially from the counties of north Georgia. Prior to the entrance of the Georgia Southern & Florida Railway the county was very thinly settled, but since its construction, 28 years ago, the settlement and development have been rapid, and the population in 1910 was 10,075, and has since increased largely. The southeastern is the most thickly settled and highly developed part of the county.

Ashburn, the county seat, with a population in 1910 of 2,214, is located near the center of the county and is the leading commercial town. It has a good system of waterworks, electric lights, and public schools. Saw, planing, and oil mills are located here. Sycamore, with 296 people, is the next town in size and importance and the oldest town of the county. It affords a trading point for the southern part of the county. Rebecca has a population of 252 and is situated in the northeastern part of the county. It is a trading and shipping point for that vicinity. Other smaller towns and shipping points are Sibley, Dakota, Worth, Inaha, Amboy, Felder, Hobby, and Coverdale.

The facilities for transportation are good. Three railroads traverse the county. The Georgia Southern & Florida Railway passes through the county in a northwest and southeast direction. It affords shipping and passenger facilities for Sibley, Dakota, Worth, Ashburn, Sycamore, and Inaha. The Hawkinsville & Florida Southern Railway enters the county north of Felder and traverses it in a southwestern direction, intersecting the Georgia Southern & Florida Railway at Ashburn. The Atlanta, Birmingham & Atlantic Railroad crosses the northeastern corner of the county.

The products are marketed principally at Ashburn, Sycamore, and Rebecca, and from these towns the products ultimately reach the larger markets of the State, chiefly Atlanta, Macon, and Savannah.

The county has a good system of public roads, many of which have been constructed with sand and clay. The roads are numerous and reach every part of the county.

All parts of the county are reached by rural mail routes and telephone lines. Rural schools and churches are numerous. The farm-houses and barns are gradually being improved, and wire fences are being built in many places.

#### CLIMATE.

Turner County, in common with all south Georgia, has a warm and equable climate. The summer season is long and hot and the winter mild. It rarely becomes cold enough to form ice, though light frosts are frequent. Snow rarely falls, and it remains on the ground only for brief periods. The average temperature of winter is 50.1° F. and of summer 82.1° F. There are few extreme fluctuations in temperature and the seasonal changes are gradual.

The average date of the first killing frost in the fall is November 11 and that of the latest in the spring about March 6. Killing frost has occurred, however, as late in the spring as April 15 and as early in the fall as October 23. There is an average growing season of 231 days. This is long enough for maturing all the common crops,

and the mild winter weather makes it possible to carry on farm work and to grow winter cover crops and some vegetables throughout this season.

The average rainfall during the growing season is about 34 inches. Crops rarely suffer from droughts, except on the loose sandy lands.

There is no Weather Bureau station in this county, but the records kept at Albany, a station in Dougherty County, are fairly representative of local conditions. The following table gives the normal monthly, seasonal, and annual temperature and precipitation as recorded at this station:

*Normal monthly, seasonal, and annual temperature and precipitation at Albany, Dougherty County.*

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December.....	51.6	84	12	3.86	1.78	7.39
January.....	48.5	80	13	3.88	3.66	2.54
February.....	50.2	81	-2	5.53	8.99	3.54
Winter.....	50.1			13.27	14.43	13.47
March.....	61.0	93	27	5.07	4.68	2.19
April.....	66.8	98	34	3.49	.40	7.99
May.....	74.9	103	40	3.68	2.14	3.15
Spring.....	67.6			12.24	7.22	13.33
June.....	81.5	104	52	4.08	1.85	3.36
July.....	82.9	106	61	5.67	7.66	8.90
August.....	81.9	102	61	6.37	2.00	11.64
Summer.....	82.1			16.12	11.51	23.90
September.....	77.7	100	46	3.04	2.43	9.12
October.....	67.4	97	30	2.29	2.10	.19
November.....	57.7	84	23	2.32	2.18	4.66
Fall.....	67.6			7.65	6.71	13.97
Year.....	66.8	106	-2	49.28	39.87	64.67

#### AGRICULTURE.

Turner County lies in one of the more recently developed sections of the State, which accounts for the condition of the fields, many of which are filled with stumps and deadened trees, for the newness of the farm buildings, and for the absence of old houses, churches, and cemeteries. Forty years ago there were not a dozen farms within the present limits of the county, and these consisted of small cleared areas in what was otherwise a dense, heavy forest of longleaf pine.

A few cattle roamed the woods, depending upon the native growth of wire grass for subsistence. The crops produced were mainly subsistence crops, though a small amount of cotton was produced. The land was practically valueless, and many land lots sold for as little as \$1 each. The nearest markets were Montezuma and Albany, to which the settlers hauled their products, such as hides, tallow, and cotton.

About 28 years ago conditions were changed by the building of the Georgia Southern & Florida Railway through the county. A development of the turpentine industry immediately took place, and this brought in many settlers. Later lumbering became important, and this opened the field for agriculture. Most of the forest has been cut over. Turpentine and lumbering have not been important for the last 6 or 7 years, and agriculture has now become the leading pursuit. The development within the last 10 years has been so rapid that the statistics of the 1910 census do not give an accurate idea of present conditions.

The county has a good basis for the establishing of a well-balanced system of agriculture, including the growing of cotton and the general farming crops, as well as special truck crops.

The agriculture of Turner County at the present time consists in the production of cotton and corn, with oats, cowpeas, sweet potatoes, and grasses and grains cut green as minor crops, and the raising of hogs the most important of the live-stock interests.

Cotton is the principal crop of the county. The acreage has increased considerably since 1909, when, according to the census, there was a total of 25,506 acres devoted to this staple. The production in that year was 12,509 bales, or an average of 0.49 bale per acre. The area in cotton was about 46 per cent of the improved land in farms. According to ginner's reports, Turner County produced 16,373 bales in 1912, and 22,148 bales in 1913, an increase of nearly 90 per cent in 4 years. The acreage has doubtless increased proportionately.

The corn crop of the county is second in importance, and occupied about 26 per cent of the improved land in farms in 1909. The area in corn that year was 14,504 acres, and the production 201,699 bushels, or an average yield of 13.9 bushels per acre. Since 1909 the acreage and production have increased considerably, but the average yield per acre apparently has remained about the same or shows only a slight increase. The better farmers ordinarily obtain from 18 to 25 bushels per acre. In boys' corn club contests a yield of 100 bushels or more per acre has been obtained. This is mentioned to show what can be accomplished under the most intensive methods of cultivation. The corn produced in the county is used for feeding the work stock and hogs, and to supply meal. The quantity grown is

insufficient to meet the demands of the county and some corn is imported.

In 1909 only 2,533 acres of oats were sowed. From this acreage 53,643 bushels of grain were produced, an average of 21 bushels per acre. Observation shows that the acreage of oats has also increased since 1909. Almost every farmer has increased his plantings and on many farms as much as 50 per cent of the cultivated area is devoted to this crop. A conservative estimate places the increase in acreage since 1909 at 400 per cent. This increase is due in part to an effort to establish a more stable system of agriculture. The oats are grown mainly as feed for the work stock, but part of the crop is cut green for hay.

Peanuts are of some importance in the agriculture of the county. There were 3,396 acres planted in 1909, producing 58,736 bushels. A small quantity is shipped out of the county, and part of the crop is gathered to supply the home demands and local trade of the towns, but the crop is grown mainly for hog pasture.

Cowpeas are more widely grown each year and have become one of the important forage crops. They are valued chiefly as a hay crop and, secondarily, as a soil renovator and for hog pasturage. Only small quantities of the ripened seed are sold, but considerable seed is saved for planting next year's crop.

Until within the last two years wheat has never been considered an important crop. At the present time, however, there are over 1,000 acres devoted to the production of this grain. A mill at Sycamore offers a market for the wheat or will grind it for the farmers' use.

In addition to the above-mentioned products, which form the basis of the agriculture, there are a few crops worthy of consideration as valuable minor products. Sweet potatoes are grown on almost every farm to supply the needs of the home, and there is a surplus for shipment. Small patches of sugar cane are grown for the manufacture of sirup for home use. Garden vegetables, cantaloupes, pecans, peaches, pears, plums, and figs are also produced in a small way. The Rocky Ford is the most popular variety of cantaloupe. In 1914, 100 carloads were shipped from Ashburn. This crop constitutes one of the money crops of minor importance to the county as a whole, but is of relatively great importance in the restricted sections where it is grown. It is also worthy of mention by reason of the possibility of more extensive planting.

Considering its size, Turner County ranks high as a hog-raising county. According to the census, 9,189 hogs were sold or slaughtered in 1909. Berkshire, Poland China, Duroc Jersey, and Tamworth

breeds and grades of these are kept. It is believed that the number has increased greatly since the census enumeration. These hogs supply, to a large extent, the home demands for meat and lard. Some pork products are sold.

A considerable number of cattle and a few sheep and goats are slaughtered or sold annually. The dairy cows average one for each farm.

Some recognition of the adaptation of soils to crops is seen in the county. It is common knowledge that the sandy loams of the Tifton and Norfolk series are especially well suited to the production of cotton. The farmers also recognize their value for use in growing corn, peanuts, oats, and wheat. The areas of lighter and deeper surface soils in these same types are selected in growing cantaloupes. The more sandy areas are chosen where peanuts are to be grown and the heavy areas when wheat and oats are the crops.

Most of the farms in Turner County are fairly well equipped with good work stock. Mules are depended upon largely for the performance of the farm work and these ordinarily are shipped in from other sections of the State or from other States. Good farm houses and moderate-sized barns, insufficient to store the grain and hay supply, are the rule. In a climate where the winters are so mild it is not necessary to have the large, warm barns found commonly in more northern States. On the best farms disk plows, harrows, riding cultivators, mowing machines, rakes, and other improved implements are employed. Good fences are found on most farms. The general appearance of the farms indicates a fair degree of prosperity.

Owing to the prevailing sandy character of the surface soils, the cultivation of the crops can be carried on with comparatively little trouble. Cotton is the crop which receives the greatest attention. After the small plants have been harrowed and chopped out to a stand, the crop receives usually from five to eight cultivations. It is necessary to cultivate frequently in order to keep down the rank growth of weeds and grass and also to prevent a crust from forming on the surface. The corn crop receives from three to five cultivations.

The rotation most commonly used consists of one year cotton, sowing crimson clover in the fall, with corn the second year, sowing cowpeas at the last cultivation, and oats or wheat the third year, sowing cowpeas after this crop is harvested. A great many, however, plant cotton year after year in the same field or simply alternate it occasionally with corn or peanuts.

Large quantities of commercial fertilizers are used in growing the crops. According to the census of 1910 the value of fertilizers used in 1909 was \$117,125. At present the expenditure is estimated at

twice this amount. The bulk of the fertilizer is purchased ready mixed, the most commonly used grades analyzing 10-2-2<sup>1</sup> or 10-2-4. In some cases a 10-3-6 mixture and in some others a poorer grade, 8-2-3, is used. These are the grades commonly applied to cotton, corn, and oats. In the growing of cantaloupes a mixture higher in nitrogen and potash is used. A fertilizer analyzing 8-6-8 is common. A good grade is also used for alfalfa. The cowpeas and peanuts are fertilized with a mixture containing less nitrogen than the fertilizer used upon the other crops. Many farmers buy the various ingredients, such as acid phosphate, kainit, and cottonseed meal, and mix them at home. It is estimated that in 1915 more than 2,000 tons of home-mixed material was used. The common mixture consists of 200 pounds of 16 per cent acid phosphate, 200 pounds 12 per cent kainit, and 100 or 200 pounds of cottonseed meal.

A considerable sum is expended annually by the farmers of the county for labor. Day labor receives from 80 cents to \$1.25 a day, depending upon the character of the work to be performed. Plow hands receive about \$20 a month. Cotton is picked at standard rates of 50 to 75 cents per hundred pounds of seed cotton.

According to the United States census of 1910, there were 1,199 farms in the county, with an average of 108.5 acres to the farm.<sup>2</sup> Actual land holdings range from 10 acres to as much as 18,000 acres or more. The area of improved land per farm was 45.4 acres.

Twenty-nine per cent of the farms of the county are operated by the owners. It is thus seen that tenant farming is largely depended upon. The usual rent is a share of the crops, the proportion varying with the terms of the lease. Cash rent ranges from \$2.50 to \$10 an acre, with an average of \$5 an acre. The tenant farmers are about equally divided between the white and the negro races.

The price of land in Turner County varies widely, depending upon the quality of soil, drainage conditions, and location with respect to Ashburn and lines of transportation. Land of the Plummer soils, some of the land of the Susquehanna, Myatt, and Kalmia types, and a portion of the Norfolk sand sells for a few dollars an acre, while the prevailing prices for the improved Norfolk sandy loam and Tifton sandy loam range from \$40 to \$100 an acre. Land forested with good merchantable timber is also held at high prices.

#### SOILS.

The soils of Turner County belong in the Coastal Plain and River Flood Plains soil provinces. Those of the Coastal Plain occupy the

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<sup>1</sup> Fertilizer formulas in this report are stated in the order: Phosphoric acid, nitrogen, potash.

<sup>2</sup> Each tenancy is tabulated as a "farm" by the census.

larger part of the county and include the important agricultural soils. This county lies wholly in what is known as the Altamaha Upland. Most of this is formed of unconsolidated marine deposits. A narrow strip along its western edge is composed of partially indurated sandstone—the Alum Bluff formation.<sup>1</sup> The latter seems to underlie the entire county and outcrops in narrow ledges along some of the streams. This formation apparently has no effect upon the greater part of the soils, though the Susquehanna sandy loam is doubtless influenced in places by it. Outcrops of this underlying material, where of sufficient size, have been shown on the map by symbol.

The soils of the county are divided into two distinct classes: (1). Those of sedimentary origin and (2) those of alluvial origin. The former have been derived from unconsolidated deposits that consist largely of beds of sand and clay. These original deposits, to form true soils, have been modified by different agencies, such as weathering, erosion, and the growth and decay of vegetation.

In the differentiation of the soils a number of characteristics are considered, color, texture, structure, and topography being the most important. Difference in color is, no doubt, in the soils of this county largely a matter of difference in the degrees of oxidation to which the soil material has been subjected and is not due to any original difference in color. Content as well as character of the organic matter is likewise a factor in producing color differences. The color of the soils and their topography are closely related. The soils occupying the highest positions and having the best drainage are the brightest colored, while those occurring in the poorly drained or flat situations show considerable mottling of gray and pale yellow. The soils of the county are prevailingly medium to coarse in texture, the surface soils in particular being usually sandy.

The soils have been grouped in the Tifton, Norfolk, Plummer, Susquehanna, Ruston, Myatt, and Kalmia series. All but the Myatt and Kalmia series and Swamp are upland sedimentary soils.

The soils of the Tifton series are gray to grayish brown in color, and the subsoil a yellow, friable sandy clay. Occasionally grayish-brown mottlings occur in the lower part of the subsoil where drainage is less thorough and where the materials are less completely oxidized. A characteristic of this series is the presence of many rounded iron concretions or ferruginous pebbles, ranging from one-eighth to three-fourths inch in diameter. These are scattered over the surface and disseminated throughout the soil and subsoil and give the types the local names “red pebble land” or “pimply land.” The presence

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<sup>1</sup> Veatch. Geology of the Coastal Plain of Georgia.

of large quantities of these pebbles is the main difference between the soils of this series and those of the Norfolk series. Two members of the Tifton series, the Tifton sandy loam and coarse sandy loam, are mapped.

The Norfolk series comprises types with light-gray surface soils and a yellow, friable sandy clay subsoil. In Turner County these soils occupy a somewhat lower position than the Tifton soils and are not quite so well drained. They are prevailingly lighter in color, owing largely to the lack of the effect of the brown pebbles found in the Tifton soils. The Norfolk sandy loam, coarse sandy loam, and sand with a loamy phase occur in the county.

Soils included in the Plummer series have gray surface material and mottled gray and yellow, sticky sandy clay or gray sand subsoils. They occupy low-lying, poorly drained situations, receiving the seepage waters from higher lying areas of the Tifton and Norfolk types. Two types, the Plummer sandy loam and the Plummer sand, are mapped.

The Susquehanna soils are gray to brown in color and are underlain by a heavy, plastic, sticky clay. The body color of the subsoil is predominantly red, mottled with gray, but drab, yellow or mottled yellow and red colors may appear. The different colors may be traced to varying conditions of drainage and aeration. In places the lower subsoil may be influenced by underlying limestone. The sandy loam type is the only member of the series mapped in this county.

Types mapped in the Ruston series have a gray to grayish-brown surface soil, and yellowish-red to reddish-yellow, slightly sticky sandy clay subsoil. This series in Turner County occupies an intermediate position between the Norfolk and the Susquehanna series as regards color and structure of the subsoils. The sandy loam type is the only member of the Ruston series mapped.

The alluvial types include soils from both old and recent alluvium found in narrow first bottoms and terraces along some of the larger streams. This alluvium consists of materials washed from the surrounding Coastal Plain soils, reworked and deposited by the streams. Where they form the second bottoms or terraces these deposits give rise to soils of the Kalmia and Myatt series; where they form the first bottoms Swamp is the resulting type.

The Kalmia series comprises types with gray or yellowish-gray surface soils and yellow or mottled yellow and gray subsoils. The Kalmia fine sandy loam is the only type mapped.

The Myatt soils differ from the Kalmia in that the surface soils are darker in color. The subsoils are mottled yellow and gray and have a compact or plastic structure. These types occupy low, flat areas and the surface drainage is not so good as in the case of the

*Kalmia*. The Myatt sandy loam is the only member of this series developed in Turner County.

The first-bottom material, classed as Swamp, is so variable in color and texture that no definite type description could be given it. The Swamp areas are covered with water the greater part of the year.

Besides Swamp, which is nonagricultural, eleven distinct soil types and one type phase are found in the county.

The following table gives the actual and relative extent of the several soils:

*Areas of different soils.*

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Tifton sandy loam.....	55,680	31.3	Tifton coarse sandy loam.....	2,496	1.4
Norfolk sandy loam.....	54,080	30.4	Norfolk coarse sandy loam....	1,728	.9
Plummer sandy loam.....	31,296	17.6	Kalmia fine sandy loam.....	1,664	.9
Norfolk sand.....	12,928	8.2	Plummer sand.....	1,600	.9
Loamy phase.....	1,600		Ruston sandy loam.....	1,280	.7
Susquehanna sandy loam....	5,888	3.3	Total.....	177,920	.....
Swamp.....	4,544	2.6			
Myatt sandy loam.....	3,136	1.8			

#### TIFTON SANDY LOAM.

The soil of the Tifton sandy loam consists of gray to grayish-brown loamy sand, grading at about 5 inches into yellowish-brown or pale-yellow loamy sand to light sandy loam, which extends to a depth of 10 to 15 inches. The typical subsoil is a bright-yellow sandy clay. A characteristic feature of this type is rounded ferruginous gravel, which occurs scattered over the surface and mixed with the soil mass. In some fields these pebbles are in such number that they interfere somewhat with cultivation. This condition is usual on ridges where the clay subsoil lies close to the surface. Here the soil packs and bakes, which makes plowing difficult.

In the northwestern part of the county, in the vicinity of Rocky Mount Church, Hopewell School, and Swift Creek, and in the eastern part along the Allapaha River are small areas, mapped as Tifton sandy loam, that depart slightly from the typical description. These areas are small and occupy the crests of ridges and knolls, as well as the brows of slopes. They have a shallower soil and the subsoil is a sticky, sandy clay to clay of a yellowish-red color, showing mottlings of red and yellow in the lower part of the profile. These areas would have been mapped as Ruston gravelly sandy loam had they been larger. In practically every part of the county areas of a lighter phase of the Tifton sandy loam were encountered. Here the upper part of the soil consists of sand to loamy sand extending to a depth of 15 to 20 inches. Where the surface soil has this depth the upper

subsoil is likely to be a heavy sandy loam which grades into the sandy clay at about 24 to 30 inches. Areas showing this variation lie on the east side of Deep Creek about  $1\frac{3}{4}$  miles north of Geoghagan Bridge and 2 miles southwest of Felder. Large areas in the western part of the county have the same character. A few small areas of Tifton fine sandy loam too small to map as a separate type were included with this type.

The Tifton sandy loam differs from the Norfolk sandy loam mainly in containing iron concretions, which in Turner County are entirely lacking in the Norfolk type. These two soils often pass gradually one into the other and the boundary drawn in such instances is an arbitrary one. The ferruginous pebbles are smooth and round and range from one-eighth to three-fourths of an inch in diameter. They often form as much as 10 to 40 per cent of the soil mass.

The Tifton sandy loam occurs extensively in all parts of the county and covers a larger acreage than any of the other soils mapped. It has an undulating to rolling topography and occurs chiefly on broad, sloping ridges or divides between the streams. It has good surface and internal drainage. This soil occupies the highest parts of the ridges and gives way to the Norfolk soils on the slopes toward the drainage ways.

About 85 per cent of the Tifton sandy loam has been cleared and brought under cultivation. The remaining portion supports a growth of longleaf pine. This type is the best cotton soil of the county and is used extensively for the production of that crop. Corn is the second crop of importance, but is grown only to a slight extent as compared with cotton. Oats, cowpeas, peanuts, cantaloupes, sweet potatoes, and wheat are grown. The cantaloupes mature early in the season and bring a good price in the northern markets. This is the only special crop at present grown in the county.

The yields of cotton range from one-half to 1 bale or more per acre.<sup>1</sup> Corn yields from 15 to 50 bushels per acre, with an average of about 25 bushels, and oats from 25 to 40 bushels. Peanuts yield well on this soil, but most of the crop is planted for use as forage for hogs. Sweet potatoes yield from 100 to 300 bushels per acre. Cowpeas grow well and the yield of seed is fairly large, but most of the crop is cut for hay or turned under to improve the soil. Wheat gives satisfactory yields. Fruits and garden vegetables grow successfully.

All of the crops grown upon the Tifton sandy loam are fertilized to a greater or less extent. This soil responds freely to fertilizer, though the benefits derived from the fertilizers used depend largely

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<sup>1</sup> The statements in this report as to yields of crops are based upon estimates and records furnished by farmers.

upon the amount of vegetable matter contained by the soils and the methods of preparation of the seed bed and cultivation of the crop. Cantaloupes receive 600 to 1,000 pounds per acre of an 8-6-8 mixture. Cotton receives from 200 to 600 pounds per acre, and in some cases more, of an 8-2-2 or occasionally a 10-3-6 mixture. Applications for corn are usually about the same in grade but lighter than for cotton. Some of the farmers mix acid phosphate and cottonseed meal and use this for corn. Cowpeas and peanuts are also fertilized, but not so heavily as cotton and corn. Fertilizer for wheat usually consists of about 1,000 pounds of cottonseed meal per acre. Occasionally oats and wheat are given an acreage application of 75 to 100 pounds of nitrate of soda as a top dressing in the spring.

The prices of land of the Tifton sandy loam are gradually increasing. Much of the land is held at about \$50 an acre. In some cases, however, the price ranges as high as \$75 to \$100 an acre.

The Tifton sandy loam largely determines the agriculture of Turner County. This type of soil is considered by most farmers as the most valuable in the county for the production of all crops. The crops do not suffer from drought, as the surface soil readily absorbs sufficient amounts of rainfall and the subsoil structure is such that it retains moisture during periods of dry weather. The soil, like all other types of the county, is deficient in organic matter. This can easily be supplied by the growing and plowing under of leguminous crops, such as cowpeas, velvet beans, and crimson clover. With the incorporation of this organic matter in the soil, the nitrogen content would be increased. Improvement of this type is lasting. The condition of the few patches of alfalfa sown on this soil suggests that the extension of alfalfa growing might be profitable.

#### TIFTON COARSE SANDY LOAM.

The Tifton coarse sandy loam consists of a grayish-brown to yellowish coarse sand to loamy coarse sand, 7 to 12 inches deep, underlain by a yellow coarse sandy loam, which grades into a coarse sandy clay at a depth of about 20 inches. In some places the lower subsoil is mottled with reddish brown, the color being due to the decomposing of iron pebbles. The presence of iron concretions differentiates the soil from the Norfolk coarse sandy loam. It is not uncommon to find, mixed with the brown pebbles, rounded white and yellow quartz gravel about the size of buckshot.

The Tifton coarse sandy loam is developed in small bodies. It is inextensive and of little importance as compared with the Tifton sandy loam and the Norfolk sandy loam types. The largest areas are located to the east of Pleasant Hill Church and to the southwest of Rebecca. Scattered areas are found in other parts of the county.

The Tifton coarse sandy loam has a gently rolling topography and good drainage. The open nature of the surface soil and subsoil makes the type somewhat unretentive of moisture, and crops suffer during long hot and dry periods.

All of this type is under cultivation and is used for growing the crops common to the section. It is handled in the same way as the sandy loam type, and there is ordinarily no marked difference in the yields obtained. Land values are practically the same as for the Tifton sandy loam and Norfolk sandy loam.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Tifton coarse sandy loam:

*Mechanical analyses of Tifton coarse sandy loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
254021.....	Soil.....	9.9	19.1	11.2	37.8	11.6	7.0	3.4
254022.....	Subsoil.....	5.0	14.4	9.0	33.8	12.4	9.1	16.3

#### NORFOLK SANDY LOAM.

The soil of the Norfolk sandy loam is a light-gray to gray loamy sand, passing gradually at 6 to 8 inches into a pale-yellow loamy sand to light sandy loam which extends to a depth of about 10 to 15 inches. This is immediately underlain by the subsoil, which is usually a yellow, friable sandy clay, continuing to a depth of 3 feet or more. Many slight variations from this typical soil exist. The surface soil often appears almost white on top, in which case it is generally composed of rather deep, loose sand, with the subsoil lying at about 20 inches. Such areas are of small extent, otherwise they would have been separated as a deep phase of the sandy loam. Besides these, small patches of Tifton sandy loam, Norfolk sand, and Ruston sandy loam have been included with this type. A part of the variation is due to the fact that the Norfolk sandy loam and Norfolk sand in some places are closely associated and merge gradually one into the other, thus making it very difficult to establish boundaries between them.

This soil differs from the Tifton sandy loam mainly in containing none or practically none of the iron pebbles carried by the latter and in having a slightly different topography.

The Norfolk sandy loam is the second type in extent and importance. It is widely distributed over the county, but is most extensive northeast of Ashburn.

The Norfolk sandy loam lies on the slopes leading from the Tifton ridges to the areas of Plummer soils and Swamp along the drainage

ways. Its topography is generally sloping, but a few areas are almost level. The drainage of the type is good, but not so complete as that of the Tifton sandy loam. It lies below the Tifton and receives some seepage water from areas of the latter soil. Terracing is not often necessary on this land to prevent washing.

The Norfolk sandy loam is a good agricultural soil. Some of the farmers consider it superior to the Tifton, but in general the latter is probably the better soil. Perhaps 80 per cent of the Norfolk type has been cleared and is now used for crop production. Longleaf pine is the prevailing forest growth in the uncleared areas.

There is little difference between the agriculture on this type and that on the Tifton sandy loam. Cotton, corn, oats, and peanuts are the leading crops, with sweet potatoes, sugar cane, and garden products grown mainly for home consumption. Cotton yields from about two-fifths to 1 bale per acre, corn 15 to 50 bushels, and oats from 20 to 60 bushels. Peanuts, sweet potatoes, and sugar cane give satisfactory yields. Cowpeas are grown extensively, the crop generally being used for hay. This soil is handled in practically the same way as the Tifton sandy loam, and the commercial fertilizers used are about the same as those for the Tifton sandy loam.

Land of this type sells at \$35 to \$100 an acre, depending upon proximity to lines of transportation and the improvements of the farm.

The Norfolk sandy loam is a productive soil and well suited to the production of crops common to this locality. It is considered the most drought-resistant soil in the county and for this reason corn and oats are grown to a larger extent than upon the other soils. The soil is easy to till and responds quickly to the addition of fertilizers or manures. Green manuring crops are very beneficial, and the results are quite lasting. The sugar cane grown on this soil makes a light-colored syrup of good flavor.

#### NORFOLK COARSE SANDY LOAM.

The Norfolk coarse sandy loam consists of a gray to yellowish-gray loamy coarse sand, with an average depth of 8 inches. This is underlain by a yellow coarse sandy loam which gradually becomes heavier with increasing depth and passes into a coarse sandy clay at depths between 18 to 24 inches. In some places the heavier layer of the subsoil may lie as deep as 30 to 32 inches. Quartz gravel, the particles ranging from the size of a pea to more than an inch in diameter, may be found either on the surface or in some part of the soil profile.

This type is not extensively developed in Turner County. It occurs in a few scattered, though well-defined and typical, areas,

the largest in the northwestern part of the county along the Warwick Road about 1 mile west of County Line School, another just east of Pleasant Hill Church, and a third about 2 miles south of Rebecca. Smaller areas are located near Ashburn and in other parts of the county.

The type is derived from about the same original material as the sandy loam type of this series, but is influenced by beds or lenses of coarser grained material. The topography is gently undulating. Good drainage results from the topographic relief and the open soil and subsoil material.

Land values are about the same as on the Norfolk sandy loam and Tifton sandy loam types in the same vicinity.

About 95 per cent of the type is cleared and utilized in the production of the staple crops of the county. The yields are about the same as on the Norfolk sandy loam. Agricultural conditions also are about the same and the means of improvement suggested for the Norfolk sandy loam will apply equally well to this soil. The surface soil is considerably looser and more incoherent than that of the sandy loam, which lessens the power to hold moisture and sometimes causes damage to growing crops during protracted seasons of drought.

#### NORFOLK SAND.

The soil of the Norfolk sand has a light-gray color on the surface and at 2 or 3 inches a yellowish-gray to pale-yellow color. The material is a loose, incoherent sand. The subsoil consists of a pale-yellow medium sand extending to 3 feet or more. It is not uncommon, however, to encounter in places sand of different color and texture in the lower subsoil.

Included with this type are small bodies where coarse sand extends to a depth of 3 feet and there is some quartz gravel. Two bodies of this sort occur in the northwestern corner of the county in the vicinity of Hopewell School and a smaller body about 3 miles southeast of Ashburn. It is regarded as a soil of very low productiveness and inferior to the typical soil, being loose, open, porous, and very droughty.

The greater part of the typical Norfolk sand has a rather rounded, broken, billowy, and sometimes almost a dunelike topography, but a few small patches have a level surface. These are rarely found close to streams, as are the more rolling areas.

Areas of this type lie principally along the larger streams in the county. The largest single body is north of Deep Creek, near Ross Lake and Paulks Pond. Other areas lie on Little River, along the Tift County line in the southeastern part of the county, between Deep and Wolf Creeks, and northwest and southeast of Clements

Chapel along Daniels Creek. Other, smaller patches are scattered irregularly over the county.

Owing to the rolling surface and incoherent structure, the Norfolk sand has good to excessive drainage.

The type is an undesirable soil for agriculture. The content of organic matter is low, and if this were increased by plowing under green manures or adding stable manure it would rapidly disappear under cultivation. Those areas in cultivation usually consist of a few small patches included in fields made up largely of other types. With good management and a liberal supply of commercial fertilizer, added in several applications, the soil can be made to produce fair yields of corn, cotton, and oats in seasons of ample rainfall, but ordinarily, if used at all, it should be for crops maturing before the hot and dry months of summer. It is best suited to the production of early truck crops.

At present practically all of the Norfolk sand is lying idle. It supports a growth of scrub oaks, a few stunted pines, palmetto, and occasional clumps of wire grass. Undergrowth of whatever kind is scanty.

The main problem in handling this soil will be the maintenance of a sufficient supply of organic matter. Coarse manures will be found very beneficial. When the soil is improved, Scuppernong grapes can probably be grown with a fair degree of success, and perhaps peaches.

*Norfolk sand, loamy phase.*—The loamy phase of the Norfolk sand consists of a gray sand to loamy sand, passing at 6 to 8 inches into a pale-yellow loamy sand, underlain by a yellow loamy sand to a depth of 30 to 36 inches. A sandy loam is not infrequently encountered at 30 inches, and this may sometimes pass into a sandy clay within the 3-foot profile. In a few places some small areas of Norfolk sand were included within areas of this phase.

The Norfolk sand, loamy phase, is of small extent and for this reason is of little agricultural importance. The largest body is about 1½ miles northeast of Geoghagan Bridge. Smaller areas lie in the vicinity of Live Oak Church, one-half mile east of Rainey Ford, three-fourths mile southwest of Prosperity School, and in other parts of the county.

This phase has an undulating to level topography and is well drained. It is practically all in cultivation. In point of productiveness and resistance to droughts it is an intermediate soil between the Norfolk sandy loam on one side and the typical Norfolk sand on the other. In both conditions it is inferior to the former and superior to the latter.

All the local crops are grown on this phase, with yields slightly lower than those obtained on the Norfolk sandy loam. It is appar-

ently used to a greater extent for the production of corn and oats than for cotton.

Land of this phase sells at \$25 to \$50 an acre.

The moisture conditions are more favorable on this phase than on the true Norfolk sand. The presence of a sandy loam substratum within the 3-foot section in many places also enables this loamy sand to hold fertilizer and manures better than the sand. It is very easily tilled, and this advantage, together with the smooth topography, invites the use of modern machinery. Only very shallow plowing is necessary, and subsequent cultivation is easy and more effective than in soils that form a crust after rains.

#### PLUMMER SANDY LOAM.

The soil of the Plummer sandy loam is a gray to bluish-gray sand or loamy sand, with a depth of 8 to 12 inches. The immediate surface soil is generally almost black from the organic matter it contains. The subsoil consists of a gray, mottled gray and yellow or a mottled gray, yellow, and brown, sticky, sandy clay. Some small areas of Plummer sand and Plummer fine sand are included. A variation having a black surface soil and a yellowish-gray subsoil also was included with the typical sandy loam. It occurred in strips ranging from 5 to 50 feet in width and was thus too small to map.

This soil occurs along practically every drainage way and water-course in the county. It occupies a topography varying from sloping to flat or depressed. It lies on the slopes around the heads of draws or drainage ways, in low-lying upland flats near streams, and in small ponds and depressions. The type is very poorly drained as a result of both its position and its sticky, compact subsoil, which prevents the movement of water downward. It receives a large part of the seepage water from the soils occupying higher levels, usually soils of the Tifton and Norfolk series. No very large areas of Plummer sandy loam occur in this county. It generally lies in narrow strips along both sides of the streams.

In its present condition the Plummer sandy loam is almost worthless. It supports a forest of pine, with an undergrowth of bay, pitcher plant, saw palmetto, and other water-loving plants that afford some pasturage. With the installation of a system of ditches this soil might be successfully drained and thus made productive. It is usually rich in organic matter, and if drained would probably produce fair crops of cotton and corn for a year or two. No attempts have been made to drain the areas of this soil in Turner County, and none of the type is cultivated. It is considered waste land and only used for pasture or forest land.

This type is sold in conjunction with the adjoining upland and lowers the price of the farms in which it occurs extensively.

#### PLUMMER SAND.

The soil of the Plummer sand is a gray to bluish-gray sand with a depth of 6 to 8 inches, grading into a lighter gray sand subsoil, which extends to a depth of 3 feet or more. In some places a layer of compact brown sand is encountered, the type in such places resembling the Leon sand. This variation occurred in such small areas that no separation was deemed necessary.

This type is not so extensive as the Plummer sandy loam type. The largest areas are north of Deep Creek in the vicinity of Geoghagan Bridge and Rainey Ford, and along the southern boundary of the county, east of the Chula Road. Smaller areas are found in other sections of the county.

This type has a position similar to that of the Plummer sandy loam. It is wet during most of the year and is worth less, except for the little pasturage it affords. Even if drained it would be of low productiveness. None of it is in cultivation and it is considered waste land. It supports vegetation of the same character as the sandy loam type. It would be rather difficult to build up this soil to a fair state of productiveness, and even then the improvement would not be lasting.

#### SUSQUEHANNA SANDY LOAM.

The surface soil of the Susquehanna sandy loam consists of a gray to dark-gray loamy sand to light sandy loam, changing in most cases in the lower part of the soil section, which has a thickness of 8 or 10 inches, to a yellowish-gray to yellow sandy loam. The subsoil is variable, but as typically developed consists of a yellow sandy clay to a depth of about 18 inches, where it is underlain by a heavy, stiff, sticky, and plastic, mottled clay. Usually the base color is a dull red and the mottlings are gray, drab, and various shades of yellow. The base color may also be gray and mottled with drab, blue, and different shades of yellow, with some streaks of red. The impervious, heavy nature of the subsoil material is a constant feature, no matter what the variation in color may be.

Besides the variability of color, other local differences are found throughout the type. In some places the surface material is predominantly fine, while in others there is sufficient coarse material to form a true coarse sandy loam. Small knolls occur where the surficial material has been removed, leaving the heavy subsoil exposed, such spots giving rise to the local name of "clay gall land." The subsoil in small areas is a sticky, heavy, mottled yellow and gray

sandy clay instead of plastic clay. All these variations occur in areas so small that it is impracticable to make separations. There are also included with the type small spots of Norfolk sandy loam, Norfolk sand, and Plummer sandy loam, which for the same reason are not shown on the soil map.

The Susquehanna sandy loam is found in areas of varying size throughout the county. Its chief development is in the extreme western part. It occurs mainly along the streams which flow westward from the county. The largest area is found in the northwestern corner of the county in the vicinity of Hopewell School, with other large areas along the Worth County line between Rocky Mount and Harmony Churches.

This type is derived from beds of heavy, unconsolidated marine clay, which immediately underlie the beds of material which give rise to the predominating soil types of the county. It is only where these beds are exposed through the cutting down of the streams that the type is developed. These beds of clay are encountered in digging wells in all parts of the county. Beds of consolidated or indurated material generally occur as outcrops on the upper margins of this type. These outcrops mark the dividing line between the lower lying Susquehanna and the higher lying Tifton or Norfolk soils.

This type has a distinctive, sharply undulating topography consisting of irregular knolls, ridges, and corresponding depressions or miniature valleys. In places fair-sized fields of a fairly uniform surface soil exist, but these are exceptional. The topography favors surface drainage, except in the mentioned depressions. The impervious nature of the subsoil, however, arrests the passage of the water downward and keeps the land wet for some time after heavy rains. A very small part of this type is under cultivation. It originally supported a good growth of longleaf pine, which has been removed, leaving most of the land in a cut-over condition, with stumps, dead snags, and old logs lying about over the surface.

Cotton produces about one-half bale to the acre in average seasons, when well fertilized. In exceptional cases as much as 1 bale per acre has been obtained. Under the methods of handling corn a yield of 15 to 20 bushels per acre of this cereal is expected. The soil is productive but difficult to handle. The uneven topography makes it one of the less desirable types in the county for agriculture.

The general agricultural conditions found over the type are far below the average of the county. The land is held at values ranging from \$15 to \$40 an acre.

This soil would be improved by the incorporation of vegetable matter. The more rolling areas should be seeded and used for pastures. Bermuda grass and lespedeza would be valuable for this purpose.

## RUSTON SANDY LOAM.

The surface soil of the Ruston sandy loam consists of a grayish-brown sand to loamy sand, with a depth of 8 to 10 inches. The subsoil is a yellow to reddish-yellow, friable sandy clay, which, in many places, becomes heavy and plastic with increasing depth.

This soil is intermediate between the Norfolk sandy loam and the Susquehanna sandy loam in the color and structure of the subsoil. In many places the surface material has been removed, leaving the heavy subsoil exposed. These places are known locally as "gall spots." In cultivated fields it is not uncommon to find the clay subsoil within plow depth of the surface.

Only small, unimportant areas of Ruston sandy loam occur in Turner County. Some of the larger occurrences are one-eighth mile south of Rainey Ford, southwest of Shivers Bridge, southwest of Sycamore, and south and west of Liberty Church. Other, smaller areas are located in different parts of the county, usually adjacent to some drainage way. The type occupies rolling to broken areas, and is well drained. It supported a native timber growth of longleaf pine, some shortleaf pine, and a few oaks. Much of the type is lying idle, as its location and topography make it unsuitable for farming. It can be bought for \$10 to \$20 an acre.

Results of mechanical analyses of samples of soil and subsoil of this type follow:

*Mechanical analyses of Ruston sandy loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
254027.....	Soil.....	5.4	13.8	10.0	39.4	16.0	10.6	5.0
254028.....	Subsoil.....	2.0	6.0	4.4	18.9	12.6	9.4	46.9

## MYATT SANDY LOAM.

The immediate surface soil of the Myatt sandy loam is often black, owing to the presence of accumulated organic material. Below the upper few inches and extending to a depth of 6 or 8 inches there is a gray loamy sand. The subsoil is a mottled gray and yellow, sticky sandy clay of a rather impervious character. As mapped the type includes areas of Myatt sand, Myatt very fine sandy loam, Kalmia fine sandy loam, and Kalmia sandy loam. These areas were not separated, because of their intricate association and small size.

The Myatt sandy loam forms narrow strips of low-lying terraces along the larger streams. The topography is flat and in some local areas more or less depressed. This location and the impervious subsoil give poor drainage, and the type is covered with water during

wet seasons. It lies above ordinary overflow, but is flooded when the water reaches high stages.

This type is most extensively developed along Deep Creek, Little River, and Daniels Creek. Smaller developments are situated along some of the other streams of the county.

Owing to the danger of overflow and the naturally poor drainage, this soil has never been put into cultivation. It could be reclaimed by the construction of systems of drainage ditches, and when properly drained it should prove a valuable soil for the production of corn and oats.

A forest growth of pine, gum, and some cypress originally covered the areas of this type. All the merchantable timber has been removed. At present the vegetation consists of palmetto, wire grass, gallberry, and other water-loving plants. Cattle and hogs graze to some extent on this vegetation.

#### KALMIA FINE SANDY LOAM.

The surface soil of the Kalmia fine sandy loam consists of a gray loamy fine sand to fine sandy loam, which becomes pale yellow in color at about 4 to 6 inches, and extends downward to 10 or 15 inches. The subsoil, typically, is a pale-yellow, friable fine sandy clay. In some of the lower situations and under poor drainage conditions the subsoil in the lower part of the 3-foot section shows considerable mottlings of gray. Included with this type are a few small areas of Kalmia sandy loam. The Kalmia fine sandy loam is closely associated with the Myatt sandy loam and patches of the latter have been included with it.

This type has a small extent. It occupies narrow strips of terrace along some of the larger streams. However, the area situated about one-half mile east of Dakota, except at its upper and lower ends, where it is adjacent to Lime and Deep Creeks, does not extend along a watercourse. It does, however, occupy low ground where water passes during extremely heavy rainfall. A stream formerly flowed through this valley, but now enters an underground channel to the north.

The topography of the type is flat and level to slightly undulating. Lower lying areas have fairly good natural drainage, while higher but flatter areas require ditching before they can be used for agriculture.

This type formerly supported a growth of pine, together with some oak, gum, elm, and magnolia. Practically all of the merchantable timber has been cut, and an undergrowth of wire grass, palmetto, gallberry, and some slash pine remains. Probably not more than 20 per cent of the type is cleared and under cultivation. These areas

are largely used for the production of corn, oats, and cotton, of which satisfactory yields are obtained. Sugar cane does well, giving a fair yield and excellent quality of sirup. The type is used to some extent for the grazing of cattle.

This type of soil is usually sold in conjunction with the adjoining uplands.

Like the Norfolk and Tifton soils, this type is deficient in organic matter. In supplying this and in any other methods of improving the condition of this soil for agriculture, the methods recommended for the upland types have been found effective.

#### SWAMP.

Swamp includes areas of soils occurring along the larger streams of the county, where the materials vary widely in color, texture, and structure, so that separation into individual types is impracticable, if not impossible. The areas of swamp are low lying and covered with water the greater part of the year. They support a dense growth of cypress, gum, bay bushes, swamp maple, and various other water-loving plants.

Swamp can not be used for farming in its present condition, but by ditching and straightening stream channels some of it could be reclaimed. Such areas would be well suited to corn and pasture grasses.

Important areas of Swamp are located along the Allapaha River, and Deep and Double Run Creeks.

#### SUMMARY.

Turner County, with an area of 278 square miles, or 177,920 acres, is situated in the south-central part of the State of Georgia, in a well-drained, gently rolling to rolling country. The population of the county is 10,075. The principal towns are Ashburn, the county seat, with a population of 2,214, Sycamore with 296, and Rebecca with about 252 inhabitants.

The county is crossed by the Georgia Southern & Florida, the Atlanta, Birmingham & Atlantic, and the Hawkinsville & Florida Southern Railroads.

The climate is mild, with a long growing season, and favorable to the growing of a wide range of crops.

About one-third of the area of the county is improved farm land. Cotton is the main money crop, and corn, cowpeas, and oats are grown for feed. Potatoes, sugar cane, peanuts, melons, vegetables, and some fruit are grown for home use. Cantaloupes are grown for shipment.

Commercial fertilizers are used on all the soils of the county.

Besides Swamp, there are 11 distinct types and one type phase of soil in the county. Nine of these are upland soils and two terrace soils.

The Tifton sandy loam is the most important and extensive soil of the county. It is well suited to general farming and cotton growing, and all the common crops are grown on it.

The Tifton coarse sandy loam is of small extent. It differs from the sandy loam only in texture.

The Norfolk sandy loam is an extensive and important soil. It is suited to the production of the same crops as the Tifton sandy loam, but probably is a little better corn and oats soil than the latter.

The Norfolk coarse sandy loam differs from the sandy loam only in texture and moisture-holding capacity.

The typical Norfolk sand consists of a deep, loose sand and is not used for agriculture, although the loamy phase is used to some extent.

The Plummer sandy loam and Plummer sand are low-lying and poorly drained soils occurring along practically all of the drainage ways. They are not farmed and can not be, in their present condition.

The Kalmia fine sandy loam and Myatt sandy loam are alluvial soils occupying narrow stream terraces. Because of their small extent, they are unimportant agriculturally.

Swamp includes the low, wet areas along the larger streams. The soil materials vary in color, texture, and structure, and separation into distinct types was not practicable. Swamp can not be farmed in its present condition. Certain areas could probably be reclaimed by ditching.



[PUBLIC RESOLUTION—No. 9.]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled*, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils.]



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